

Mr. Jonathan A. Evans, Chair

NH SEC Subcommittee

21 South Fruit Street, Suite 10

Concord, NH 03301-2429 7 June 2021

Dear Mr. Evans:

These remarks are for your committee's consideration on and before 17 July 2021, I plan to speak also.

The Antrim Wind facility was built for \$65 million. It was sold 2-3 times after it was built, each time to a big corporation. We must assume each sale required "due diligence" on the part of the buyer. But did that due diligence include any noise measurements?

There were many conflicts in the testimony about noise measurements during the SEC approval process. But the SEC settled these pre-construction conflicts without any actual measurements of noise. And there is no record of any "due diligence" studies, or actual noise measurements, by AWE since. Whatever limitations this lack of pre-construction noise data had on the question of due diligence, all such questions became irrelevant after the turbines were installed. Post-construction noise measurements were, and are, possible, requiring only an interest in actually making them.

It seems reasonable, in view of the noise complaints, to assume that AWE, or its current owner, have made post-construction noise measurements to determine whether the turbine noise levels exceeded the agreed noise levels. Since the loudest noises heard by its neighbors will only come in definable, and forecastable, meteorological situations, AWE needed only to measure the turbine noise during these "noisiest weather" conditions. A few careful measurements at the right times, would settle this issue, for much less time and money than AWE has spent on legal fees to postpone their day of reckoning.

If these noise measurements were taken under the meteorological conditions which would maximize the noise perceived by its neighbors, and they were less than 40Db, we would conclude that the noises would never be excessive.. The “noisiest weather” is simply a combination of strong winds to generate the loudest noise, and a nighttime “temperature inversion” to trap this noise within the neighborhood.

With the operation of the facility at stake, it beggars the imagination to believe that AWE has NOT already made such noise measurements. There simply is too much at stake NOT TO HAVE MEASURED THOSE SOUNDS. If so, we must further conclude that their own measurements show that they exceeded the 40 Db limit.

I must conclude that AWE has made noise measurements in Antrim, and these show that AWE exceeds the 40Db noise level, at least in certain weather conditions. No other conclusion passes the laugh test!

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Additional Background Information:::::::::::::

The Generation and Broadcast of Turbine Noise:::::::::::::

The noise emitted by the turbines increases as the wind speed increases. The broadcast of this noise to its neighbors depends on the amount of noise which goes up and out into air, and the amount of noise which is trapped in the air below the height of the turbines, and sent out horizontally to its neighbors. The turbine noise can be trapped in a small volume of air when there is a “temperature inversion”, that is the (reverse of the usual) situation in which the air temperature is lowest near the ground. In a “temperature inversion”, the ground cools the lower air by radiating its heat to space. On a clear night, the cooling ground creates a pool of cold air near the ground, the depth of which gradually get thicker, from the ground up. On some nights the top of this cold pool

of air stays below the turbines, on others it deepens so that the turbines themselves are immersed in this cold air. When this happens, the turbine sounds that would otherwise spread up and out over large areas, are trapped in the cold pool of air. The cooling of the air near the ground starts near sunset and increases during the night with its maximum cooling usually late at night, before dawn. The optimum circumstances for an inversion are clear skies, dry air, and light surface winds. Obviously the optimum combination for noise at its neighbors would be for strong winds at the tops of the turbines and little wind down in the valleys with the neighbors.

Sound measurements:::::::::::::

Everyone, including AWE, knows that the main determinant of the noise level emitted by the AWE turbines is the wind speed! Everyone also knows that the main determinant of the how far and wide that noise is broadcast to its neighbors, is the temperature structure in the area, specifically the depth and strength of any “temperature inversion”. Therefore, noise measurements need ONLY be taken on nights when the weather is “right”, “right” for maximum generation and broadcast of noise to its neighbors. In such weather conditions, unless the measured noise levels exceed the standards, there is no value to any other noise measurements. But without these measurements for optimum noise (both its generation and its broadcast), there is NO basis for any discussion of the noise perceived by the neighbors! Which neighbors are subject to the noise is also dependent on the wind direction. The wind speed and direction, the temperature structure at low levels and the wind direction will factor into which neighbor(s) are affected, a factor which would be important in the examination of complaints.

Forecasts of the nights with likely “worst weather” can be provided by many weather services.

Has AWE made such measurements?????

Since these meteorological effects are well known in the industry, and certainly well understood by the AWE technical consultants, it would be very easy, fast, and inexpensive to make a few noise measurements during the last many months at sites around the AWE neighborhood, to determine the noise levels at the times of the meteorologically maximum noise generation AND broadcast! If these measurements showed that the turbine noises were below the required levels, no further work or argument would be required. BUT, HAVE THEY BEEN DONE????? WHAT WERE THE RESULTS?????

All the above comments apply not only to the general measurements of noise levels, but equally to any future analysis of complaints.